ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

DRAFT

RFCA Standard Operating Protocol for The Consolidated Water Treatment Facility: Treatment and Disposal of Remediation Derived Wastewaters

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RECORD OF MODIFICATIONS

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ACRONYMS

CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
COPC	Contaminants of Potential Concern
D&D	Decommissioning and Decommissioning
DOE	U. S. Department of Energy
DQO	Data Quality Objectives
EPA	Environmental Protection Agency
ER	Environmental Restoration
FSUWG	Future Site Use Working Group
GAC	Granular Activated Carbon
HAZ	Hazardous Waste
IDM	Investigatively Derived Material
IGD	Implementation Guidance Document
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measures / Interim Remedial Actions
IMP	Integrated Monitoring Plan
LLW	Low Level Waste
LLM	Low Level Mixed Waste
LRA	Lead Regulatory Agency
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFFO	Rocky Flats Field Office
RISS	Remediation, Industrial Area and Site Services Project
RSOP	Rocky Flats Clean Up Agreement Standard Operating Protocol
SEP	Solar Evaporator Ponds
SITE	Rocky Flats Environmental Technology Site
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

This is a Rocky Flats Clean Up Agreement (RFCA) Standard Operating Protocol (RSOP) for the operation of the Building 891 (B891) wastewater treatment facility. The Rocky Flats Environmental Technology Site (RFETS) is in the final phase of closure and conversion to an alternative land use. Closure activities include decommissioning of nuclear and non-nuclear facilities, building removal, and an on-going planning process for post closure activities and final actions under the Comprehensive Environmental Response Compensation and Liabilities Act (CERCLA). Among the on-going activities is the completion of remedial actions set forth in various decision documents approved for the Site clean-up, including a number of former Operable Units (OUs). OU1, the 881 Hillside, and OU2, the Mound Plume and East Trenches, are two such mature remedial actions. This RSOP is intended to both extend the useful life of the treatment system installed as part of the OU1 and 2 actions and to document the universe of remediation wastewater acceptable for treatment in B891.

B891, the Consolidated Water Treatment Facility (CWTF), was originally installed to treat contaminated ground water collected from the 881 Hillside. The original treatment processes were enhanced with the transfer of the OU2 treatment systems to the B891 location. Currently, B891 serves as a treatment facility for remedial wastewaters derived from a number of projects and incidental waters. All wastewater-generating activities in the former OU2 have been completed except the remediation of the 903 Pad, and all activities in OU1 are complete. B891 still has a useful life, and can supplement the Site's needs for wastewater treatment during the final phase of closure. As a result, this document has been prepared to prescribe the scope of operations for B891 until Site closure.

Most wastewaters generated pursuant to conduct of RFCA regulated activities may qualify for treatment at B891; exceptions are hazardous process waste, sanitary sewage, and wastewaters with high levels of radionuclides. This RSOP identifies the principle sources of wastewater during D&D and ER activities, describes the treatment systems installed in the CWTF, and incorporates the administrative requirements from OU 1 and 2. It also provides a summary of the key decision documents that have been approved in the course of remediating OUs 1 and 2 and other ER operations. This document is intended to serve as the controlling document for B891 operations through the final closure of RFETS. It documents the completion of OU1 activities and closes the Industrial Area IM/IRA.

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1.0 INTRODUCTION

1.1 Purpose

Building 891 (B891), the Consolidated Water Treatment Facility (CWTF), is a combination of water treatment operations originally installed for Operable Units (OU) 1 and 2 at the Rocky Flats Environmental Technology Site (RFETS). An effort was made to consolidate the decision documents for both OUs in the late 1990s, but a final document was never approved. In the interim, both the Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE) have provided written concurrence with specific requests made by the Site about B891 operations. The purpose of this document is to consolidate the remnant activities from the OU1 and OU2 decision documents and the collection of concurrence letters into a new decision document for the facility, and to authorize the treatment of water from a broad range of sources, all related to the remediation of RFETS and closure of the Site. This RFCA Standard Operating Protocol (RSOP) will facilitate the continued use of B891.

1.2 Scope

The role of treatment provided by the CWTF is expected to change as the Site moves toward closure. The scope of this RSOP reconfirms the building's role in treating water generated in remediation activities, and extends the definition of remediation wastewater for B891 treatment from anticipated D&D and ER activities expected over the next 4 to 5 years.

1.3 Key Components

This RSOP describes the background of the CWTF, and documents the types of wastewaters derived from future Decontamination and Decommissioning (D&D) activities that are suitable for treatment at the CWTF as remediation wastewaters. The treatment processes in the CWTF are described in terms of the parameters which can be treated and the expected level of removal. The process specifications dictate the types of wastewaters which may be accepted by B891; generally, the CWTF is capable of treating most contaminants except solutions with high radionuclide concentrations. The B891 processes are not described in terms of waste acceptance criteria because wastewaters not meeting discharge ARARs may be retreated until the water can be discharged. Rather, remediation and related wastewaters are acceptable for treatment at B891 if the contaminants can be removed by the unit processes at the CWTF.

This RSOP also replaces the CWTF requirements in the decision documents related to Operable Unit 1 because all remedial actions have been completed. It also replaces the Industrial Area IM/IRA, from which the relevant monitoring activities have been administratively transferred to the Integrated Monitoring Plan.

2.0 PROJECT DESCRIPTION

2.1 Background

The following sections describe the origin of water treatment for OUs 1 and 2 and the eventual consolidation of the treatment processes at one central location. With the approval of the Rocky Flats Cleanup Agreement (RFCA) in 1996, DOE, EPA and CDPHE also adopted an Operable Unit Consolidation Plan (Attachment 1 to RFCA) that combined most remaining Individual Hazardous Substance Sites (IHSSs) into two general OUs, the Industrial Area (with CDPHE as the Lead Regulatory Agency (LRA)) and the Buffer Zone (with EPA as the LRA).

2.1.1 Regulatory History of OU1, OU2 and CWTF

2.1.1.1 Operable Unit 1

Operable Unit (OU) 1 comprised 12 Solid Waste Management Units (SWMU), now known as Individual Hazardous Substance Sites (IHSS), in the area generally south and east of Building 881. Remedial Investigation and Feasibility Study Reports were prepared in the late 1980s. These reports identified the major contaminants in the OU and the range of alternative remedies.

The January 1990, the *Interim Measures/Interim Remedial Action Plan and Decision Document for 881 Hillside Area Operable Unit No. 1* (DOE 1990) addressed remediation of contaminated OU-1 groundwater because of its proximity to Woman Creek. The IM/IRA identified, screened, and evaluated the remedial action alternatives and selected the preferred interim remedial action.

The alternative that was chosen involved the construction of a french drain to intercept contaminated alluvial/colluvial groundwater from the 881 Hillside area. The groundwater was collected in two sumps that pumped the water to a new treatment plant (B891 treatment facility). Additionally, a sump was built to collect flow from the Building 881 footing drain, which was then pumped through a separate piping system to the treatment facility, B891. The final component of the OU1 selected remedy was the new treatment plant. It was equipped with a UV-peroxide unit for removal of organic contaminants and ion exchange equipment for removal of inorganic parameters such as total dissolved solids, uranium, trace metals and salts. A detailed description of the treatment systems is included below.

In February, 2001, pursuant to implementing the final OU1 CAD/ROD (February 23, 2001), action was taken to remove the french drain originally installed as part of the OU1 remedial actions (K-H 2001). The agreement required that the separate collection well remain in place for an additional year during which ground water would be sampled, collected and treated for the constituents of concern. The well remains in the monitoring program.

2.1.1.2 Operable Unit 2

Operable Unit 2 comprised 20 Individual Hazardous Substance Sites in three distinct areas: the 903 Pad, the Mound Area, and the East Trenches Area. All three areas had been used for the storage and disposal of waste fluids, contaminated oils, metals destruction and other activities. In March 1991, the *Final Proposed Surface Water Interim Measures/Interim Remedial Action Plan/Environmental Assessment and Decision Document for South Walnut Creek Basin Operable Unit No. 2* (DOE 1991), was submitted to address contaminated (volatile organic compounds [VOCs] and radionuclides) surface water in a portion of the South Walnut Creek Drainage.

The remediation of this OU has been a complex process, which included the removal of hundreds of drums of buried wastes, thermal desorption of volatile organics from excavated soils, and installation of innovative technologies for the *in situ* treatment of contaminated ground water pursuant to a number of RFCA decision documents. In accordance with the 1991 IM/IRA, flow from surface water seep SW-59, South Walnut Creek, and from a culvert at surface water seep SW-061 was collected for treatment at the OU-2 field treatability unit, except during infrequent high flow periods. The surface water was collected and treated by a chemical precipitation/cross-flow membrane filtration system for removal of suspended solids, radionuclides and metals, and by a granular activated carbon (GAC) adsorption system for removal of VOCs. The latter treatment technologies were moved from OU2 to B891 after the OU2 remediation activity was completed. No additional waters from the Mound or East Trenches Areas were transported to B891 for treatment.

The remaining actions in the IHSSs included in OU2 were officially consolidated into the Buffer Zone Operable Unit when RFCA was approved in 1996. A remnant activity from the OU2 work plans is the remediation of the 903 Pad, which may generate wastewater which requires treatment. Under this RSOP, B891 could accept such remediation-derived wastewater as the CWTF, and not as remnant treatment systems from OU2.

2.1.2 Combination of the OU1 and OU2 Treatment Systems

In May 1995, DOE-RFFO (95-DOE-08294) submitted a request to the agencies requesting approval to combine the treatment systems, and treatment of the groundwater generated at OU 1 and OU 2, at the OU 1 treatment facility (B891). In addition DOE-RFFO committed to use the more stringent ARARs of the two units, until site wide ARARs were implemented. CDPHE and EPA approved this consolidation of the treatment facilities in a letter dated September 14, 1995.

In September 1997, DOE-RFFO submitted the *Final Mound Site Plume Decision Document* (RF/RMRS-97-024) that was a major modification to the *Final Surface Water Interim Measures/Interim Remedial Action Plan/ Environmental Assessment and Decision Document for South Walnut Creek* (DOE 1994) This modification was based on several years of sampling data from two of the three sources that proved there was no unacceptable risk. As a result, pursuant to a letter from CDPHE and EPA dated April 14, 1995, waters from South Walnut Creek and the culvert at SW061 were no longer collected. This same letter gave approval to collect and treat the SW059 water at the Consolidated Water Treatment Facility (CWTF) located at B891 (as stated above). The

Mound Site Plume IM/IRA modification involved construction of a subsurface groundwater collection system coupled with a passive reactive metals treatment system to treat contaminated groundwater from the Mound Site Plume and seep SW-059 to the surface water action levels specified in the Rocky Flats Cleanup Agreement (RFCA, DOE 1996).

In July 1997 DOE-RFFO (01122-RF-97) submitted a request to the agencies for a modification of the *IM/IRA Plan and Decision Document for the 881 Hillside Area Operable Unit No. 1*. This request had two objectives. The first objective was a modification of the OU1 IM/IRA to create a single, discrete, identifiable regulatory authority that governed the operations at the CWTF. The second objective was to update the OU1 IM/IRA to be consistent with RFCA and the Integrated Monitoring Plan (IMP). EPA's response, dated August 27, 1997, stated that the agency agreed, in general, with the modifications. However, EPA added that there were certain exceptions that needed to be resolved. One of the concerns was the Site proposal that the CWTF accept water from the main decontamination facility, the protected area and groundwater well purges based on historical knowledge rather than sampling each proposed transfer. DOE, RFFO responded in October, 1997 (01486-RF-97) that historical information and process knowledge supported suspending the sampling under normal circumstances. DOE did commit to sampling if there are "indications of unusual levels of contamination."

2.1.3 Letter Agreements

Throughout the history of the CWTF there have been several letters approving treatment of various waters at the CWTF facility. Following is a list of these letters and the agreement concerning water treatment at Building 891.

- 93-DOE-0401, DOE-RFFO to EPA and CDPHE, allows treatment of water from the main decontamination facility (Unit 18.01) provided the plutonium and americium concentrations are below the discharge standard for Building 891 (April 14, 1993).

- 94-DOE-08056, DOE-RFFO to EPA and CDPHE, allows the treatment of "groundwater monitoring purge water" containing RCRA F-listed and regulated characteristic constituents, that have historically been below RCRA characteristic limits. This letter also allowed treatment of water decanted from Investigative Derived Material (IDM) drums (July 25, 1994).

- November 6, 1995, CDPHE to DOE-RFFO, RE: Proposed Action Memorandum/Modification of the Corrective Action Section of the Operating Permit for RFETS – IHSS 109, OU2. In this letter CDPHE states that the thermal desorption process will generate condenser liquids, consisting of free phase organic liquids and water. CDPHE stated that the water could be separated from the organic liquid and treated in B891.

- January 30, 1996, CDPHE to DOE-RFFO, RE: Approval of Accelerated Action Plan for Six IAG USTs. In this letter CDPHE agrees with the statement in the IAG that allows tank liquids and rinsates to be treated at existing RFETS treatment facilities including Building 891.

- RF/RMRS-96-0059, Final Proposed Action Memorandum for Source Removal at the Mound Site IHSS 113 states that the aqueous phase condensate will be treated at the CWTF (February 3, 1997).

- RF/RMRS-97-011, Final Proposed Action Memorandum for the Source Removal at Trench T-1 Site IHSS 108, states that 1) incidental water from excavations requiring treatment will be treated at B891 and, 2) liquid residues from the treatment of debris containing listed wastes will be treated at B891.

- October 5, 2001 CDPHE to DOE-RFFO and K-H, RE: Management of Groundwater from Building 444 at the Rocky Flats Environmental Technology Site (RFETS). In this letter, CDPHE concurs with the treatment of B444 ground water at B891 and establishes criteria for managing this water.

Based on the above letters of agreement, the CWTF has been given approval to treat a variety of waters from CERCLA remediation activities. Additionally, it has been Site practice to treat at the CWTF other "incidental waters", generated during RFCA regulated activities and defined in 1C91-EPR-SW-1, Rev.2, *Control and Disposition of Incidental Waters*, that are not free releasable to the environment.

2.1.4 Other Relevant CERCLA Actions

2.1.4.1 The Industrial Area IM/IRA

Prior to the 1996 Rocky Flats Cleanup Agreement, CERCLA actions at the Site were governed by an Interagency Agreement (IAG) between DOE, EPA and CDPHE dated January 22, 1991. In accordance with that agreement, DOE prepared the *Interim Measures/Interim Remedial Action Decision Document for the Rocky Flats Industrial Area* (the "IA IM/IRA"; DOE 1994), which reflected the change in Site mission from production to environmental restoration, and began the process of reevaluating several of the Site's monitoring programs. The objective of the IA IM/IRA was to "ensure that environmental monitoring is adequate to support D&D and other non-routine activities within the industrial area."

The IA IM/IRA cataloged the known or suspected sources of contaminants of potential concern (COPCs) within the industrial area, discussed the environmental media most likely to be impacted by the COPCs, surface water, ground water and air, and proposed a conceptual site model that postulates how such materials might leave the Site and how to monitor such movement. The IA IM/IRA listed potential sources of contaminants by building and IHSS. Since the document was published, numerous changes have taken place at RFETS. Current status information about buildings and IHSSs is best obtained through the RFETS website and EDDIE, the Environmental Data Dynamic Information Exchange.

While the IA IM/IRA sets forth a comprehensive assessment of potential sources of contaminants and proposed a monitoring system to detect the contaminants during active D&D, its purpose, as stated above, was to begin the process of reevaluating monitoring activities. Following the change in Site contractors in 1995 and the replacement of the IAG with RFCA, routine monitoring activities at the Site fell under a

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new decision document known as the Integrated Monitoring Plan (IMP). Using the EPA's method of Data Quality Objectives (DQOs), DOE, in consultation with the RFCA regulatory agencies and a wide spectrum of stakeholders implemented an approach to monitoring activities that is reviewed on an annual basis and changed as necessary. Most of the actions contemplated in the IA IM/IRA were incorporated in the IMP or related activities, or, by agreement with the agencies, closed.

The IA IM/IRA contains a detailed description of miscellaneous water management, incidental waters, footing drains, and related sources, which is relevant to this RSOP. The IA IM/IRA describes the screening process applied to miscellaneous water and potential disposition options. Water quality data is matched to the waste acceptance criteria of various on-site wastewater treatment operations and if water meets the criteria for a given facility, it may be delivered for treatment. The key element of the IA IM/IRA scheme for miscellaneous water management is that the CWTF is authorized to accept the miscellaneous wastewaters as long as the water can be effectively treated.

By adoption of this new RSOP for operation of the CWTF, the treatment of miscellaneous wastewaters at the CWTF is allowed as previously described, and the RSOP would close the IA IM/IRA.

2.1.4.2 The Rocky Flats Cleanup Agreement - RFCA

RFCA provides clean up guidelines for Site closure, including the "treatment...of contaminated...water...in a manner that protects public health...and minimizes the generation of new wastes." See RFCA Preamble. This RSOP provides for the continued use of the CWTF for the treatment of contaminated water in a cost effective manner.

2.2 General Conditions

2.2.1 Description of the CWTF Treatment Processes

The CWTF is a composite of the groundwater treatment plant created to treat remediation wastewater from the 881 Hillside (OU1) and the trailer treatment system from South Walnut Creek Basin (OU2).

The OU2 treatment system consists of a trailer-mounted chemical precipitation/microfiltration system designed primarily for the removal of metal contaminants. The original design specification for this unit was a maximum total metals concentration of 20,000 micrograms per liter for once through treatment. It is now the first unit operation in the present 891 process. In the first stage of chemical precipitation, sulfuric acid and ferric sulfate are added to the water, reducing the pH; hydrogen peroxide may also be added at this stage. In the second stage, lime and sodium hydroxide are added, increasing the pH and causing the precipitation of iron and some dissolved metal hydroxides. The solution is then pumped through a microfiltration circulating system, where the particulates are removed to a sludge holding tank from which it enters a filter press. Liquid from the filter press is returned to the chemical precipitation system, and the solids are packed into drums and disposed of as low-level

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mixed waste (LLMW). The process liquid is either pumped to a neutralization tank or recirculated. The flow rate into the system is approximately 60 gallons per minute (gpm), with a similar outflow to the holding tank.

The second operation in the B891 process is the addition of hydrochloric acid to the neutralization tank, lowering the pH of the liquid from 10.5 to between 9 and 9.5. This range was chosen in order to inhibit the growth of sulfate-reducing bacteria in the granular activated carbon (GAC) tank in the next operation.

The solution from the neutralization tank is pumped to another holding tank (Tank 202) which has a capacity of 15,000 gallons. The flow rate from this tank into the next unit operation is reduced to 30 gpm.

The next unit operation is the UV/peroxide oxidation unit where hydrogen peroxide is injected to oxidize the organic constituents. This operation oxidizes volatile organic compounds (VOCs) into carbon dioxide, water, and chlorides. The liquid then passes through a granular activated carbon (GAC) unit, which removes VOCs which were not adequately broken down by the previous treatment, as well as any intermediate breakdown products. The original design specification for this treatment step for once through operation limited the total concentration of organic contaminants to less than 10,000 micrograms per liter.

The original OU1 treatment system had the UV/peroxide oxidation unit, which was followed by the ion exchange tanks. In the present 891 system, the GAC tank plus a carbon dioxide injection system have been placed between the UV and the ion exchange processes. The carbon dioxide injection system was added to convert metal sulfates to carbonates, thereby increasing the efficiency of metals removal in the ion exchange treatment.

The ion exchange treatment system consists of four ion exchange columns in series, with a degasification tower to remove carbon dioxide. The solution flows first into a strong base (SB) anion exchange column, which primarily removes uranium. The second step is a weak acid (WA) cation exchange column, which removes alkalinity associated with hardness. The degasification tower is next in line, removing carbonic acid produced as a byproduct of the weak acid column. The liquid next flows into a strong acid (SA) cation exchange column which removes metals and excess hardness. The final step is a weak base (WB) anion exchange column for removal of free mineral acidity. The original design specifications for one pass through the ion exchange process allowed up to 10,000 micrograms per liter total metals and total anions, and up to 1200 picocuries per liter of total uranium.

Ion exchange resins must be regenerated at regular intervals during operation. Cation exchange resins are regenerated with hydrochloric acid, while the anion exchange resins are regenerated with sodium hydroxide. In this process, the resins are flooded with an excess of the regenerant, then drained. The resulting brine solution contains the excess regenerant and the ions removed by the resins during operation. This waste stream is a combination of acid and base, which should result in a neutral pH. If necessary, the pH may be adjusted to near neutrality. Because the brine contains the anions and cations removed during treatment, there is the potential that the brine may

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be characteristically hazardous for metals. The brine is an aqueous waste, and is managed accordingly.

The treated effluent is pumped into one of three effluent tanks, each with a capacity of 159,000 gallons. Treated effluent is sampled and analyzed before release. If the water meets effluent standards, it is discharged directly to the South Interceptor Ditch (SID). If the water does not meet effluent standards, it is reintroduced to the treatment system, either to the chemical precipitation/microfiltration stage, or into the inflow line to the ion exchange columns. For operational purposes, the original design specifications for the unit processes are considered the waste acceptance criteria for the CWTF. Operating experience has shown that, on the rare occasion that retreatment is needed, that a second pass through all or part of the treatment process results in effluent water which meets applicable standards. A situation that would result in non-compliant effluent is break through from the ion exchange resin, where resins capacity is reached earlier than expected, such as when the resin ages and weakens. Rebedding the ion exchange treatment unit would correct such a problem.

The main components of the CWTF are shown in Figure 1 and summarized in Table 1.

Figure 1 – Unit Process Diagram for B891

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Table 1 Summary of Unit Processes at CWTF

Process	Contaminants removed	Flow rate, gallons per minute
Chemical precipitation	Radionuclides, heavy metals, PCBs	60
Microfiltration	Solids; complexed radionuclides and metals	60
UV/peroxide	Volatile organic compounds	30
Granular Activated Charcoal	Volatile organic compounds	30
Ion exchange	Uranium, alkalinity (associated with hardness), metals, free mineral acidity, anions	30

2.2.2 Performance of the CWTF

As a result of the alternative evaluations done in the study phases of both OU1 and OU2, treatment technologies were selected using a number of criteria. At a minimum, each system had to be able to treat contaminated water to meet applicable water quality standards, the ARARs. Each process in the CWTF is capable of removing targeted contaminants to the ARARs levels. Each process was evaluated for removal efficiencies during the initial phases of alternative evaluation (Cirillo and Weston, 1998). The results of that evaluation are presented in Table 2, below.

The resulting effluent is suitable for release into the South Interceptor Ditch, to which state water quality standards apply. Treated water is sampled and analyzed and held in storage until results are received. Discharge is approved only if all applicable stream standards are met. B891 effluent flows through monitoring point SW027, which is located just upstream of the ditch discharge into Pond C-2. Monitoring at SW027 is continuous, and in accordance with the prevailing Integrated Monitoring Plan (IMP), a RFCA document. Pond C-2 is rarely discharged, but when it is, it is isolated for approximately two weeks so that the pond water quality can be assessed. During the period of isolation, B891 cannot discharge.

The operations log documents the dates and volumes of discharges and along with the analytical results from effluent sampling constitutes the discharge record. The discharge record becomes part of the administrative record, described in Section 7.1.

Table 2 Examples of Removal Efficiencies

Contaminant	Removal efficiency	Contaminant	Removal efficiency
Beryllium	99%	Cyanide, amenable	99.9%
Copper	99.9%		
Iron	95%	Acetone	98%
Uranium 238	99.9%	2-Butanone	94.6%
Uranium 235	99.9%	Tetrachloro-ethene (PCE)	99%
Uranium 234/233	99.9%	Trichloroethene	94%

2.3 Sources of Remediation Wastewater

As described above, the B891 treatment systems were installed to address the remediation challenges of OU1 and OU2. Because other treatment options for wastewater were available on-site through the completion of OU1 and OU2 actions, the wastewaters destined for treatment at the CWTF were those from well defined remediation activities and certain incidental waters. As Site closure progresses, including the removal of Building 374 which received and treated a wide range of process wastewaters, alternatives are being developed for the management of remediation wastewater. The CWTF will play a key role in the disposition of those wastewaters which are generated during the final phase of closure, with metal, organic and uranium concentrations within the ranges described in Section 2.2.1. The CWTF is not designed for the treatment of domestic waste, which is currently treated in B995. The CWTF is expected to remain operational after B995 closes, currently estimated to be in September 2004 (portable facilities will serve the Site after the closure of B995). Below is a discussion of the types of wastewaters and volumes expected to be treated in the CWTF.

2.3.1. Current treatment of remediation wastewater

As described, the CWTF was designed to treat waters with contaminants from the OU1 and OU2 areas, and the original installation was limited to serving OU1. With the consolidation of the facilities, B891 can now treat waters from a variety of sources including miscellaneous waters. The operations log identifies the sources of wastewater accepted for treatment and the volumes.

2.3.2. Non-Specific Contaminated Water

The primary source of non-specific contaminated water was the main decontamination facility, B903A. The estimated flow of decontamination water ranged from 70,000 to 100,000 gallons per year when B891 was originally built. That source has been reduced as a result of completion of much of the remediation investigation work, and closure of several IHSSs. Non-specific contaminated water also came from investigatively-derived purge water from ground water wells installed across the plant site.

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2.3.3. Incidental Waters

Incidental water is defined and managed in accordance with Site procedure 1-C91-EPR-SW.01, *Control and Disposition of Incidental Waters*. In general, such waters are storm water, surface water or ground water that accumulates in valve vaults, utility pits, electrical vaults, foundation drain sumps, secondary containment, excavation pits or trenches, and other natural or manmade depressions that must be dewatered. Normally, incidental water is free of contaminants and can be released to the environment. However, at some locations or under certain circumstances, an incidental water may have to be redirected to a treatment facility. If the water is directed to the sanitary collection system for treatment at Building 995, the wastewater treatment plant (WWTP), it is regulated under provisions of the Site's NPDES permit.

Incidental water may also be directed to the CWTF. Authorization is contained in the Industrial Area IM/IRA (1994), which describes the screening process by which discharge decisions must be made[1]. If water quality analyses show that an incidental water has levels of contaminants which can be treated at B891, then the water may be transported for treatment. This RSOP continues the authorization to direct incidental waters to B891 for treatment, if treatment is required, and water quality results or process knowledge demonstrate that the water can be effectively treated in the CWTF. The incidental water program at RFETS is mature and process knowledge is routinely used in the characterization of candidate sources.

2.3.4. Other Sources of Remediation Wastewater from D&D and ER.

Because Operable Unit 1 is now closed, none of the original flow from remediation activities is being treated in the CWTF. B891 continues to receive incidental waters, water from decontamination facilities, and miscellaneous remediation-derived wastewaters. Future Site activities include the D&D of all buildings and final Environmental Restoration (ER) activities. The D&D and ER activities will generate wastewater as remediation waste, which can be treated at the CWTF. Remnant process wastes and wastewater generated from deactivation and cleaning and closing the former nuclear facilities will not be accepted for treatment at the CWTF, and will be treated offsite.

D&D methodology is still evolving, as the Site gains experience with building removal. Currently, water from the Site utility system is used as a hydraulic medium for high pressure cleaning of building walls, floors and other surfaces prior to demolition. The collected water carries the solids and associated contaminants removed from building surfaces to the selected treatment process. Methods for filtering and recycling these waters are being investigated, and the prospects for reuse are good. For planning purposes, however, the total anticipated volume of water without recycling is used to

[1] The screening process is depicted in Figure 7-12 of the IA IM/IRA. The first step allows for surface discharge. If metals and organics are above discharge values, the next step allows for discharge to the WWTP. If metals and organics exceed acceptance values, the next two steps allow for discharge to OU1 and OU2 treatment facilities in order. If the proposed discharge does not meet the acceptance criteria for any facility, it is deferred to Environmental Operations Management. Currently, the last step would be deferral to off-site treatment and disposal.

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estimate the contribution of wastewater from D&D activities. These volumes, and other sources, are presented below.

2.4 CWTF Feed Stream Summary

A wide range of remediation wastewaters is expected to be generated in the course of Site closure, although the list of contaminants is short. Except for specialized wastewaters from former process waste systems, wastewater generated during D&D and ER activities will likely contain contaminants that can be removed at the CWTF. Hence, the facility will have a crucial role in providing timely and cost effective treatment of wastewaters.

The following tables present current estimates of water volumes from various D&D projects. Tables 3 and 4 present the best available information from the RISS project, which is responsible for building removal from the south side of the industrial area. It is anticipated that the major building removals in this project will be complete by the end of FY03.

Table 3 D&D Wastewater Volumes (in gallons) without recycle

Building	FY03	FY04	Total
881	-	292,250	292,250
444	-	324,500	324,500
883	-	33,250	33,250
Subtotal	-	649,900	649,900

As D&D progresses, procedures become streamlined and building removal gets more efficient. One of the efficiencies expected is a reduction in the amount of wastewater generated in the process of cleaning building surfaces prior to demolition. Current estimates indicate that as much as 70% of the water used for cleaning operations may be recycled. Table 4 presents the expected reductions in wastewater volumes if recycling is fully implemented in the RISS projects.

Table 4 D&D Wastewater Volumes (in gallons) with 70% recycle

Building	FY03	FY04	Total
881	-	87,675	87,675
444	-	97,350	97,350
883	-	9,975	9,975
865	-	36,375	36,375
Subtotal	-	231,375	231,375

In addition to the large buildings targeted for D&D by the RISS project, four additional projects at RFETS involve the complex D&D of former nuclear facilities, B371/374, B707, B771/774 and B776/777. Wastewater generated by the D&D of these buildings is not expected to be suitable for treatment at B891 and will be managed and disposed of through other facilities, most likely off-site.

However, as D&D progresses through the characterization and decontamination stages, at some point contaminant removal will reach a sufficient level that wastewaters will be compatible with the treatment processes in B891. When the wastewater from these facilities proves to be treatable at B891, it will be accepted.

Wastewater volumes from ER activities have also been estimated, based on previous experience with water volumes used in various ER projects. Table 5 presents the estimates from ER, based on a volume per cubic yard of soil removed, and on a project basis. The estimate based on soil removal is the worst case scenario and is the least likely amount of water that will require treatment in B891.

Table 5 ER Wastewater Volumes

Basis of Estimate	FY03	FY04	FY05
Cubic Yards of Soil Removed	14,423	26,069	71,943
Wastewater Volume (38.62 gal/cu. Yd)	557,026	1,006,803	2,778,488
Number of ER Projects	4	11	34
Wastewater Volume (28,000 gal/project)	112,000	308,000	952,000

Combining the information presented above, Table 6 shows a summary of the highest and lowest estimates of wastewater volumes expected to require treatment at the CWTF through Site closure.

Table 6 Summary of Predicted Wastewater Flows to the CWTF

	FY03	FY04	FY05	Total Volume
Current ER Flows	265,000	265,000	155,000	685000
D&D Low	195,000	-	-	195000
D&D High	650,000	-	-	650000
ER Low	112,000	308,000	952,000	1372000
ER High	557,026	1,006,803	2,778,488	4342317
Total Low	572,000	573,000	1,107,000	2252000
Total High	1,472,026	1,271,803	2,933,488	5677317

B891 has a capacity of about 1.5 million gallons per year, so it would be able to treat all of the predicted volumes except the highest estimate for FY05. As ER projects are completed in the years before FY05, wastewater volume estimates will be revised based on actual experience. If it appears that these activities will generate the higher rather than lower volumes, alternatives for wastewater treatment will be developed, or new influent and/or effluent storage tanks will be added to increase the overall capacity by allowing extra processing during wait periods for analytical results.

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3.0 PROJECT APPROACH

3.1 Alternatives Evaluated

In the course of judging the need for continuing the operating life of Building 891, several alternatives were evaluated. The alternatives are:

1. No Action Alternative – Close B891. This alternative is neither feasible nor implementable because remediation wastewaters cannot be pumped back into the ground or otherwise discharged to surface water. The wastewaters must be collected and managed in order for work to proceed.

2. Use B891 to support Site closure. This alternative is the continued operation of B891, which is both feasible and implementable. The operations of the building processes are firmly established, as is the facility's ability to discharge treated water that meets all applicable water quality standards. B891 provides cost effective wastewater treatment. The approximate cost is $2.00 per gallon compared to the current price for off-site treatment of $13.00 per gallon.

3. Close B891 and use off-site treatment facilities. This alternative is feasible and implementable and is currently operated as the Aqueous Waste Treatment System (AWTS). However, it is more difficult to manage large volumes of water and the costs are extremely high ($13 to $26 per gallon) compared to B891. Furthermore, shipment off-site adds an environmental burden by using fossil fuel resources unnecessarily.

4. Close B891 and Use Point of Generation Portable Treatment Systems. This alternative is only partly feasible and implementable. While portable systems are available for certain types of water treatment, no one system is suitable for all sources nor volumes of water generated. Effective treatment in a portable system requires water of known quality and flow to provide reliable treatment. In many cases, a small unit suitable for one source would not be suited for another, creating the need for multiple units with multiple capabilities. Portable or custom treatment systems are suitable for specific IHSSs or OUs (such as the former OU2 treatment system that is now part of the CWTF), where contaminants are known and design parameters are established.

3.2 Proposed Action

The proposed action is to continue to use the CWTF as a Closure Support Facility (Alternative 2), and operate it for treatment of remediation wastewaters in accordance with this RSOP. Upon approval of this RSOP, it will supersede requirements for the CWTF in the OU1 and OU2 remedial actions and close the IA IM/IRA. This action does not involve substantive changes to the physical plant or the treatment capacity within the existing building. As a Closure Support Facility, the CWTF will become a critical component of the wastewater management system during the final closure actions at RFETS.

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3.2 CWTF Operations

The CWTF is operated in accordance with Site procedures, including work controls, integrated safety management, and related procedures.

The CWTF manager of operations is responsible for the overall performance of the facility, oversight of operators, coordination of wastewater collection operations, and to maintain the readiness of the facility. A specific Health and Safety Plan has been prepared to address specific hazards and applicable controls, including safety equipment required. In accordance with Colorado Water and Wastewater Operator Certification requirements, an Operator in Responsible Charge with an A Level Industrial Operator certification has been designated for the CWTF.

3.3 Waste Management

As described in the discussion of the CWTF unit processes, some waste streams are generated by the treatment system. These wastes are managed and disposed of in accordance with Site procedures. Adequate capacity for CWTF wastes will be made available if alternative waste disposal options are implemented during closure.

At the end of the CWTF life cycle, the facility itself will become excess property and could potentially be disposed as a waste. Disposition of the CWTF will follow prevailing Site requirements and B891 will be demolished per RFCA requirements. Because B891 generated a waste stream managed as a hazardous waste, the substantive requirements of a closure plan would apply. A B891 Closure Plan will be prepared, including the substantive elements of a Closure Description Document, and will be implemented after agency approval. Given the facility size, the timeframe for demolition will be short, allowing flexibility in planning the final closure actions at RFETS.

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4.0 ENVIRONMENTAL CONSEQUENCES

RFCA and DOE policy requires that National Environmental Policy Act (NEPA) values are incorporated into decision documents. The following sections address the potential environmental consequences of the activities covered under this RSOP.

These sections discuss the impacts from the activities of the CWTF and how the impacts may be cumulative with impacts from other actions. The analysis indicates that impacts to environmental resources and human health and safety will be minimal given implementation of mitigation measures.

4.1 Geology and Soils

Soils will not be disturbed by the facility activities. Equipment will operate in and around the structure, using paved or graveled areas. Fuels or oils from transportation vehicles may be released during routine operations. However, soils on Site are not highly permeable, paved areas are typically impervious, and the Site has a spill control plan that would be implemented in the case of a spill.

4.2 Air Quality

There will be no impacts to air quality from this facility. None of the unit processes is considered an emission source, and none of the chemical processes generate gaseous by-products. The degassification step, a physical process, produces a nominal amount of carbon dioxide.

4.3 Water Quality

The CWTF is designed to produce clean water as an effluent as described previously in Section 2.2.1, with a maximum treatment capacity of about 1.5 million gallons per year. Treated water is stored and tested prior to release, and all applicable standards must be met. If stored effluent does not meet the standards for release, it is returned to the CWTF to be retreated. By virtue of the capability of storing treated water and retreating it if standards are not met, there is no impact to the environment from the release of water from the CWTF to the SID. If the maximum volume of treated water is discharged from the CWTF, it amounts to less than 7% of the volume of Pond C-2, which receives all water flowing through the SID. A 7% fluctuation in volume in Pond C-2 would not have an impact on the operation of the pond, as prescribed in the Site's pond operations procedures.

4.4 Human Health Impacts

Physical hazards impacting humans involved in operations of the CWTF are similar to workplace hazards found in comparable industrial/water treatment occupations. A specific Health and Safety Plan has been prepared to address specific hazards and applicable controls, including safety equipment required. Implementation of these control measures will minimize the possibility and potential for accidents. The use of controls and procedures denoted in the HASP, for worker protection, will also protect the public.

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4.5 Ecological Resources

Because the CWTF currently exists, and no additional equipment installation is planned under this RSOP, no impacts to plants and mammals are expected. The industrial area does not currently support or provide habitat for threatened or endangered plant or animal species. Downgradient wildlife habitat will not be damaged by the operations of CWTF. Control measures for job hazards, as previously mentioned, will be used to prevent any potential adverse effects. Additionally, the Site ecologists will be consulted before any activities are added to the scope of this RSOP, to ensure minimization of any affects to Site ecological resources. As mentioned, if operated at full capacity, the CWTF discharges would amount to less than 7% of the capacity of Pond C-2, and would not result in changes to the habitat surrounding the pond.

4.6 Visual Resources

Operation of the CWTF will have no impact on the visual resources of the Site, since the facility currently exists.

4.7 Noise

Appropriate hearing protection will be employed by workers as identified in the HASP. No hearing impacts to co-located workers will be realized by the operation of the CWTF.

4.8 Transportation

The low volume of truck traffic specific to CWTF is not anticipated to affect road traffic or safety either on-Site or offsite. If all water entering the CWTF arrives by truck and the facility operates at maximum capacity, the average truck traffic would be about one truck load per day.

4.9 Unavoidable and Cumulative Effects

During operation of the CWTF, some temporary adverse effects will occur due to the nature of the project. Some areas of surface soils may be potentially disturbed, minor quantities of liquids may be released to the environment, workers will experience health and safety risks, and fuels and resources will be consumed during the CWTF operation activities. Cumulative effects of this project's activities in addition to other activities in the vicinity should be negligible.

4.10 Irreversible and Irretrievable Commitments of Resources

The CWTF project will irretrievably use money, labor, fuel, water, chemicals and other similar items. There are no anticipated irreversible or irretrievable commitments of natural resources as a result of this proposed action.

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5.0 COMPLIANCE WITH ARARS

5.1 Identification of Applicable or Relevant and Appropriate Requirements

Appendix 1 presents the Applicable or Relevant and Appropriate Requirements that will apply to the operation of the CWTF; ARARs will be met to the extent practicable. If an ARAR is determined to not be practicable, concurrence will be sought from the LRA.

5.2 Permit Waiver

5.2.1 Requirements

RFCA paragraphs 16 and 17 establish the requirements under which the CERCLA permit waiver applies. For any action which would require a permit but for the CERCLA waiver, RFCA Para. 17 requires that the following information be included in the submittal:

a. Identification of each permit which would be required
b. Identification of the standards, requirements, criteria, or limitations which would have had to have been met to obtain each permit.
c. Explanation of how the response action proposed will meet the standards, requirements, criteria, or limitations identified in subparagraph b immediately above.

5.2.2 CWTF Compliance

The following information specifically addresses the requirements listed in a, b, and c above.

5.2.2.1 Permit Required

Because the CWTF discharges into the South Interceptor Ditch, and the SID is defined as a "receiving water" by the current RFETS NPDES permit (CO-0001333, effective October 27, 2000), the facility outfall would have been included in the current permit had it not been exempt (40 CFR 122 exempts CERCLA actions from NPDES requirements if approved by the on-scene coordinator). Similarly, although some wastewaters expected to be treated may be hazardous wastewaters due to their origin in remediation acitvities, the CWTF is also exempt from hazardous waste permitting requirements.

5.2.2.2 Requirements to Obtain a Permit

The requirements for NPDES permit applications are set forth at 40 CFR 122, which specify that an applicant complete an EPA Form 2-C, and supply all relevant facility information. The facility description and treatment process information contained in this RSOP is the same as would be included on an NPDES permit application. When issued, the NPDES permit specifies effluent limitations for the prospective outfall, based on the expected influent characteristics, the treatment capabilities of the facility and the receiving water stream standards. The permit would also require routine monitoring of the effluent and routine reports to the issuing agency.

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5.2.2.3 How the CWTF Meets the Requirements

B891 has previously met the requirements for permit waiver through the approval of the OU1 and OU2 decision documents. For purposes of this RSOP, the requirements are restated and addressed in this section. The facility description and treatment performance have been included in previous sections of this document. As described, the CWTF effluent must meet the surface water standards specified in Table 1 of RFCA Attachment 5. Unlike a normal NPDES outfall, however, the CWTF stores the effluent before discharge, allowing for water quality analysis to assure compliance with applicable standards. By storing the effluent until the water quality in known, the CWTF may retreat any batch of effluent which does not meet the effluent limits.

Water released from the CWTF into the SID moves downstream through monitoring point SW027 and into Pond C-2. All water flowing in the SID is monitored at SW027 in accordance with protocols and decision rules adopted in the IMP. IMP requirements, however, do not apply to the discharges from the CWTF. Records of the predischarge sampling, the results and the volume of water discharged are retained at the facility and become part of the Administrative Record for the Site.

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6.0 IMPLEMENTATION SCHEDULE

No schedule for implementation has been developed because the CWTF is already in place and operating. The changes described in this RSOP apply to the types and sources of wastewater which will be sent to the facility for treatment. As a Closure Support Facility, B891 will be expected to accept all of the wastewaters generated by D&D, ER and other activities.

7.0 RSOP ADMINISTRATION

This section contains information associated with the administrative record (AR) and response to comments on this RSOP.

7.1 Records Disposition

Upon completion of the public comment period for this draft RSOP, all comments received from the public (including the regulatory agencies), the comment responsiveness summary, and the LRA approval letter will be incorporated into the RSOP AR File, along with a copy of the approved RSOP and copies of the RFETS documents referenced in this document. The CWTF Sampling and Analysis Plan, operations logs, and effluent discharge records will also be submitted to the RSOP AR File.

The following information repositories have been established to provide public access to the AR Files for the Rocky Flats Closure Project:

U.S. Environmental Protection Agency (EPA)

Region VIII
Superfund Records Center
999 18th Street, Suite 500
Denver, Colorado 80202-2466
(303) 293-1807

U.S. Department of Energy Rocky Flats Public Reading Room
FRCC Library
3645 West 112th Avenue, Level B
Westminster, Colorado 80030
(303) 469-4435

Colorado Department of Public Health and Environment (CDPHE)
Information Center, Building A
4300 Cherry Creek Drive South
Denver, Colorado 80220-1530
(303) 692-3312

7.2 Comment Responsiveness Summary

Responses to public comments, including comments from the regulatory agencies, will be documented in a Comment Responsiveness Summary, which will be incorporated into the approved RSOP.

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8.0 REFERENCES

Cirillo, J. R., and W. J. Kelso 1998 — Versatile Treatment System Cleans Mixed Wastewater from Diverse Sources. Presented at Intl. Conf. On D&D, Nuclear and Hazardous Waste. September, 1998.

K-H 1998 — Control and Disposition of Incidental Waters Procedure 1C91-EPR-SW-1, Rev.2

K-H 2001 — Final Major Modification to the Operable Unit 1 CAD/ROD

U. S. DOE 1990 — Interim Measures/Interim Remedial Action Plan and Decision Document 881 Hillside Area Operable Unit No. 1 Final

U. S. DOE 1991 — Surface Water Interim Measures/Interim Remedial Action Plan/Environmental Assessment and Decision Document South Walnut Creek Operable Unit No. 2 Volume 1 Final

U. S. DOE 1994 — Final Surface Water Interim Measure/Interim Remedial Action Plan/Environmental Assessment and Decision Document South Walnut Creek Basin (OU2 IM/IRA)

U. S. DOE 1994 — Interim Measures/Interim Remedial Actions Decision Document for the Rocky Flats Industrial Area

APPENDIX 1

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Waste Disposal – Shall dispose only by transfer to authorized recipient, by release in effluents within the limits of subpart RH 4.14 (discussed above), or as authorized pursuant to (pertinent to RFETS) RH 4.34, "Method for Obtaining Approval of Proposed Disposal Procedures", or RH 4.35, "Disposal by Release into Sanitary Sewerage".	RH 4.33	A/L	Transfer to authorized recipient is met through compliance with the "offsite rule", 40 CFR 300.440. Proposals for onsite disposal of radioactive waste (if any) will be part of any accelerated action, or any final action regulatory decision document for environmental media cleanup projects proposing specific disposal methods. **RH Part 11, "Special Land Ownership Requirements" which addresses requirements if government ownership of RFETS is transferred to private ownership, and RH Part 14, "Licensing Requirements for Land Disposal of Low Level Radioactive Waste" will be reviewed for relevant and appropriate requirements for cleanup projects proposing specific disposal methods.**

Requirement	Citation	Type	Comment
FEDERAL WATER POLLUTION CONTROL ACT (aka Clean Water Act (CWA)) [33 USC 1251 et. seq.]			
COLORADO BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER	5 CCR 1002-31	C	Refer to RFCA Attachment 5 for surface water action levels and standards.
COLORADO BASIC STANDARDS FOR GROUNDWATER	5 CCR 1002-41	C	Refer to RFCA Attachment 5 for ground water action levels.
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]			
The State of Colorado is authorized to administer portions of the hazardous waste management program (e.g., RCRA) to regulate the generation, treatment, storage, and disposal of hazardous waste within Colorado. As such, the Colorado regulations that are more stringent than the federal counterparts would be applicable to the management of hazardous waste. These regulations may also be relevant and appropriate in situations where a remediation waste is "sufficiently similar" to a RCRA-listed waste (e.g., waste which was generated and disposed of prior to the effective date of regulation) or when the proposed remedial action is similar to a RCRA-regulated activity and would be appropriate to ensure that the activity is protective of human health and the environment. Although the Colorado hazardous waste management regulations are similar to the federal requirements, both the federal and state regulatory citations are provided for reference purposes and to denote that both federal and state requirements were considered in establishing the identifying the ARAR requirement adopted for the remediation of the RFETS. Only substantive portions of the regulations are required under CERCLA actions for onsite activities. The State has not verified that these are the only substantive standards. The final determination is predicated upon an analysis for a specific action.			

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]			
SOLID WASTE DISPOSAL SITES AND FACILITIES • Definitions	6 CCR 1007-2 Section 1.2	A	"Recyclable materials" means any type of discarded or waste material that is not regulated under Section 25-8-205(1)(e), C.R.S., and can be reused, remanufactured, reclaimed, or recycled
IDENTIFICATION AND LISTING OF HAZARDOUS WASTES	6 CCR 1007-3, 261 [40 CFR 261]	A	

Requirement	Citation	Type	Comment	BMP
GENERATOR STANDARDS	6 CCR 1007-3 Part 262 (40 CFR Part 262)			
• Hazardous waste determinations	.11	A/C	Persons who generate solid wastes are required to determine if the wastes are hazardous according to 6 CCR 1007-3 Parts 261, 267, 279 [40 CFR Parts 261, 266, and 279]	
• Hazardous waste accumulation areas	.34 (a)(1)(i),(ii),(iv, excluding A & B); (a)(3); (a)(4); (c)(1)	A	Persons who accumulate hazardous waste in containers or tanks must manage the waste in a manner that protects human health and the environment.	262.40-.43
GENERAL FACILITY STANDARDS	6 CCR 1007-3 Part 264, Subpart B [40 CFR Part 264, Subpart B]			
• Waste Analysis	.13 (a)	A	The owner/operator of a facility that stores, treats, or disposes of waste must verify the waste has been characterized adequately.	264.13(b)
• Security	.14	A/L	The owner/operator of a facility must prevent unauthorized access.	
• General Inspection Requirements	.15 (a), (c)	A/L	The owner/operator of a facility must inspect for malfunctions, deteriorations, and releases, and must remedy deficiencies.	264.15 (d)
• Personnel Training Requirements	.16 (a), (b), (c)	A/C	Personnel must be trained.	264.16(d), (e) 264.17(c)
General Requirements for Ignitable, Reactive or Incompatible Wastes	.17 (a), (b)	A/C	Wastes will be managed to prevent accidental ignition or	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
			reaction of ignitable or reactive waste, or the mixing of incompatible waste.	264.18
PREPAREDNESS AND PREVENTION	6 CCR 1007-3 Part 264, Subpart C [40 CFR 264, Subpart C]			
• Required Equipment	.32	A/C	Facilities must be equipped with specified equipment to *mitigate incidents*, should they occur.	
• Testing and Maintenance of Equipment	.33	A/C	Equipment must be maintained.	
• Access to Communications or Alarm System	.34	A/L	Employees must have access to emergency communications when managing hazardous waste.	
• Required Aisle Space	.35	A	Aisle space must be maintained to allow unobstructed access to emergency personnel and emergency equipment.	
CONTINGENCY PLAN AND EMERGENCY PROCEDURES	6 CCR 1007-3 Part 264, Subpart D [40 CFR Part 264, Subpart D]			
• Emergency Coordinator	.55	A	A designated employee is responsible for coordinating emergency response actions.	
• Emergency Procedures	.56 (a-i)	A		
MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING	6 CCR 1007-3 Part 264, Subpart E [40 CFR Part 264, Subpart E]	A A	Operating Record Recordkeeping	264.73 264.74

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
USE AND MANAGEMENT OF CONTAINERS	6 CCR 1007-3 Part 264, Subpart I [40 CFR Part 264, Subpart I]			
• Condition of Containers	.171	A	Containers must be *maintained in good condition.*	
• Compatibility of Waste in Containers	.172	A	Wastes must be compatible with containers.	
• Management of Containers	.173	A	Containers must be closed except when adding or removing waste.	
• Inspections	.174	A	Containers must be inspected weekly.	
• Containment				
o System Design and Operation	.175	A		
o Ignitable and Reactive Wastes	.176	A		
o Incompatible Wastes	.177	A		
• Closure	.178	A	Hazardous wastes and residues of hazardous waste must be removed or decontaminated from the unit and soils.	
• Air Emission Standards	.179	A/C	Hazardous wastes must be managed in accordance with AA, BB, CC, as appropriate.	
LAND DISPOSAL RESTRICTIONS	6 CCR 1007-3 Part 268 [40 CFR Part 268]			
• Dilution Prohibited as a Substitute for Treatment	.3	A	LDR determinations must be completed for hazardous wastes generated.	
• LDR Determination (Determination if Hazardous Waste Meets the LDR Treatment Standards)	.7	A	Land disposal restrictions apply primarily to the off-site disposal actions proposed as part of the remedial activity.	
		A		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
• Special Rules for Wastes that Exhibit a Characteristic	.9 (a-c)			